29/61 H.A.J. 10:45 A.M. Document No. 29 106007

Recession still with us — don't hire wholesale!

JHG. 10:50 A.M. In Plue [illegible] + Friday.

1. Sampling Summary — program
2. 1 gal samples from pond, 2" Well PWC 10" Well, 8" MRC Well.
3. Map marked for sampling next week.
4. Has state checked treatment plant?
5. Treat Pond? — discuss with JHG + BER.
6. Flock disposal?
7. Sample of Cellulose flocking agent — Constable. Sending Plue.
8. Infra red Spectroscope only legal accepted method. No State [illegible] limit on detergent levels in drinking water.
9. Samples from private wells in Cooke Street and Arcadia ~~Street~~ areas.

AR200077

M-R-C RESEARCH AND DEVELOPMENT LABORATORIES

CONFIDENTIAL

PROGRESS REPORT

MARCH 27, 1961

DETERGENT CONTAMINATION OF WATER WELLS

J. H. Gustafson

I Summary of Problem

It is claimed by the Plainville Water Company that water waste from M-R-C Plainville Plant containing anionic synthetic detergents have, by seepage or flow, contaminated water wells located on property adjacent to Marlin-Rockwell Corporation.

The wells of the Plainville Water Company were constructed in 1947 and apparently used without complaint for about 11 years. In the early part of 1958 consumers complained of an oil taste in the water and analyses revealed that the water contained anionic detergents.

In as much as the flowing brook between the water wells and the M-R-C pond, showed no sign of detergent it was assumed that the well contamination must be due to underground seepage from the pond.

While it is probable that in the past the Plainville Plant has used many water soluble cleaning compounds containing anionic detergents, at the present time the compounds used contain, at the most, only a trace of detergent.

Our soluble oil grinding coolant contains 20 to 25% of anionic emulsifiers which may be the main source of detergent contamination to the pond and lagoon water.

II Possible Solutions to Problem

The housing development "up stream" from the Marlin-Rockwell plant is reportedly on individual septic tank systems. It is felt that this could be the main source of detergent contamination of the water wells, via underground flow.

It may be possible to determine, by meass of Infrared Spectroscopy, whether the detergent in the well water is Alkyl benzene sulfonate ("ide) or sodium petroleum sulfonate (MRC Grinding Coolant - Kutwell 40).

Tests are going to be made on the water in the M-R-C pond to see if it contains trace amounts of hexavalent Chromium. If Chromium is found, it is probably from the Chromium of our 52100 steel and it should also be found in the well water if contamination is from the pond.

III Suggested Course of Action

1. One gallon samples should be taken from the pond; the 2" wells; and the Plainville Water Company 10" well for analysis of Chromium content. of MRC 8' well

2. Samples should be taken "up stream" from M-R-C at the points indicated on hhe map. In addition attempts should be made to obtain well water samples from private wells in the housing development North of New Britain Avenue - Cooke Street intersection.

3. The Connecticut Water Resources Commission should be contacted for inspection and approval of our present waste water treatment system.

4. We should attempt to obtain permission from Connecticut Water Resources Commission for the batch treatment of the contents of the pond and disposal of the effluent in the river.

5. We should investigate the use of wood cellulose floc in place of the bentonite clay, so as to render the floc - oil sludge combustible.

6. After the above water samples have been analyzed, the results of our findings should be discussed with Shipman and Goodwin to plan future strategy.

J. S. Appleyard

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Jamestown — Falconer

W. B. Mead — March 27, 1961

Report of call at — New York State Department of Health, 84 Holland Avenue, Albany, New York — Thursday, March 23, 1961

I saw — Col. Dappert - Water Pollution Control Board
Mr. Donald Stevens - Water Pollution Control Board
Dr. Arthur Larson - State Laboratories and Research

Summary of Meeting:

1. The problem of water contamination by surface active agents is complicated and a great deal of research is needed in this field.

2. The basic problem arises from the fact that some of the new surface - active agents, including detergents, are not broken down by normal soil bacteria.

3. Normally soaps are quite readily broken down by this process but the new household and industrial cleaning products, due to their chemical structure, possess a strong resistance to this bacteria break down.

4. The type of surface - active agent used in our soluble oil grinding solution will probably not show the strong bacteria resistance that synthetic detergents such as "Tide" will.

5. The petroleum sulfonate emulsifiers in Kutwell 40 are surface - active agents and are classed as anionic emulsifiers.

6. There is very little information available regarding these compounds.

7. It was suggested that water samples be taken "up stream" from Marlin-Rockwell and the water wells. If possible these samples should be taken from private water

wells in as much as if contamination from household septic systems is taking place it may only show up in the underground water supplies and would not show up in the drainage water in the brook or small lake.

8. It was suggested that we contact the Connecticut State Geologist to obtain more detailed information of the probable soil condition and formation in the area of the plant and the water wells.

9. It was also suggested that we attempt to trace the well contamination to our pond or lagoon water by looking for other distinguishing signs. It was suggested that perhaps Chromium, because of its presence in our 52100 steel, would be in solution in our lagoon water. If it is present, even in minute amounts, it should also be found in the well water, if this water is being contaminated by MRC.

10. The standard referee method of determination of anionic detergents involves the use of Infrared Spectroscopy. It was recommeded that this method be used on all analyses which might possibly be used as legal evidence due to the many interfering substances in our chemical colorimeteric method.

J. E. Gustafson

lbh
cc: B.E.Rogers
J.S.Appleyard

J. S Appleyard

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Jamestown | Falconer

W. B. Mead | March 27, 1961

Report of Call at: ESSO Standard Oil Company — Friday, March 24, 1961
15 West 15th Street
New York 19, New York

I saw: Mr. John Murray - Sales Engineering
Mr. Doug Bonham - Sales Engineering
Mr. George Wilkening - Industrial Hygienist - Medical Dept.

Summary of Meeting:

1. It was agreed that the petroleum sulfonate anionic emulsifiers, used in practically all soluble oils, could cause drinking water contamination.

2. This type of anionic is more readily attacked by soil bacteria than syndets such as "Tide" but it is very possible that they can migrate great distances and cause the type of contamination we are experiencing.

3. Analysis of water samples by Infrared Spectooscopy could distinguish between household detergents such as Alkyl Benzene Sulfanate (Tide) and Sodium Petroleum Sulfonates (Kutwell 40).

4. It was agreed that analysis for soluble ions such as Chromium would also be helpful in determining whether or not lagoon water is a source of the well contamination.

5. ESSO will send ussamples of the two anionic emulsifiers used in Kutwell 40. These can be used for our own referee work and possibly on future Infrared Spectroscopy which we may have performed.

Report of Call March 27, 1961

ESSO Standard Oil Company

6. ESSO Standard Oil Company reported that they have made no change in the type of emulsifier used in their product and have been using the two emulsifiers now incorporated in Kutwell 40, for a great many years.

7. Mr. Wilkening will send us their laboratory procedure for the determination of minute amounts of Chromium in water. He will also investigate qualified laboratories which are available for Infrared Spectrometer analyses of detergent contaminated waters.

J. H. Gustafson

lbh
cc: B.E.Rogers
J.S.Appleyard

J. S. Appleyard

M-R-C RESEARCH AND DEVELOPMENT LABORATORIES

PPM DETERGENT (TIDE)
In Water Samples

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Date	Plainville Water Co. 16"	10"	2"	MRC 8"	Large Pond	
1959 12 - 30					80.0	
1960 2 - 23	.5	2.5				
4 - 6				30.0		
4 - 7				40.0		
4 - 13	0	2.0		58.0		
4 - 20	0	1.0		35.0		
4 - 28	.5	1.0		27.0	25.0	
5 - 6	0	0	t	25.0		
5 - 12	0	0	2.0	20.0	80.0	
5 - 20	0	0	5.0	8.0		
5 - 26	0	0	6.0	12.0		
6 - 2	0	0	9.0	18.0		
6 - 9	0	0	7.0	6.0		
6 - 16	0	0		9.0		
6 - 23		2.0		13.0		
6 - 30	0	.5	12.0	24.0		
7 - 8	0	1.0	6.5	18.0		
7 - 18	0	.5	5.0	10.0		
7 - 22	0	0	4.0	13.0		
7 - 28	.5	0	4.0			
9 - 29	.5	.7	1.5	9.0		
11 - 2	1.0		2.0	6.0		
11 - 11		1.0				
11 - 29	2.0	2.0	2.0	10.0		
12 - 29	1.0	1.5	2.7	8.0		
1961 1 - 31	0	1.5	1.0	12.0		
2 - 28	0	0	1.0	11.0		
3 - 2					43	

M-R-C RESEARCH AND DEVELOPMENT LABORATORIES

PPM DETERGENT (TIDE)
WASTE TREATMENT PLANT

Date	Waste Treatment			River Intake	Discharge To River	Brook Above Intake
	Top	Middle	Bottom			
1961 2 - 14	13.0	5.0	13.0			
2 - 27	34.0					
3 - 2			48.0	0	1.0	0